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EXAMINER

DEAN, RAYMOND S

ART UNIT	PAPER NUMBER
2684	

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DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

By

Office Action Summary	Application No. 10/044,284	Applicant(s) LANE ET AL.	
	Examiner Raymond S Dean	Art Unit 2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 November 2004.
- 2a) This action is **FINAL**.
- 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1 - 17 and 19 - 25 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1- 17 and 19 - 25 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 11 January 2002 is/are: a) accepted or b) objected to by the Examiner.
 - Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 - Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 - 1. Certified copies of the priority documents have been received.
 - 2. Certified copies of the priority documents have been received in Application No. _____.
 - 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 - 23 have been considered but are moot in view of the new ground(s) of rejection.

Examiner respectfully disagrees with applicants' assertion that Thompson does not teach first stage and second stage HPA switches. Thompson teaches n first-stage HPA switches each corresponding to one of the 0 to n HPA channels (Figure 8, Reference No. 42) and M second-stage HPA switches (Figure 8, Reference No. 46). Switches (42) route channels to the HPAs and switches (46) route channels from the HPAs thus said switches are HPA switches.

Examiner respectfully disagrees with Applicants' assertion that Thompson does not teach that the n first-stage HPA switches, M multiplexing devices, and the M second-stage HPA switches are configurable to route any combination of the 0 to n HPA channels to any of the M downlink antenna ports. Thompson teaches n first-stage HPA switches (Figure 8, Reference No. 42), M multiplexing devices (Figure 8, Reference No. 44, Column 7 lines 61 – 63, the HPAs are the multiplexing devices), and M second-stage HPA switches (Figure 8, Reference No. 46). The satellite, which comprises the HPA switches and multiplexers, can be configured to support a variety of coverage patterns. The switch (46) allows different amplifiers to be switched to different filters depending on the desired coverage. The filters are connected to the antenna ports for transmission on the downlink. A plurality of channels will therefore be routed:

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from the first-stage HPA switches to the HPA, from the HPA to the second-stage HPA switches, from the second-stage HPA switches to a variety of filters and thus a variety of antenna ports thereby enabling a variety of coverage patterns (See Figure 8, Column 7 lines 17 – 19, Column 8 lines 1 – 7). Thompson therefore teaches wherein the n first-stage HPA switches, M multiplexing devices, and the M second-stage HPA switches are configurable to route any combination of the 0 to n HPA channels to any of the M downlink antenna ports.

Examiner agrees with Applicants' assertion that Reinhardt does not teach a first and a second set of HPA switches. Examiner also agrees with Applicants' assertion that Reinhardt does not teach routing signals to M downlink antenna ports in any combination of the 0 to n channels to any of the M downlink antenna ports. Reinhardt, however, does teach a two output mechanical switch (Section 0029 lines 3 – 4, Section 0032 lines 1 – 6, Section 0035 lines 1 – 7). Thompson and Reinhardt both teach satellites comprising switches for the routing of signals thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mechanical switch matrix taught in Reinhardt in the satellites of Thompson for the purposes of reducing the size of the switching matrices thus decreasing the weight of the satellite and increasing the degree of isolation and redundancy capability between signal paths within the switch matrices as taught by Reinhardt.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4 – 7, and 17 – 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (US 6,438,354).

Regarding Claim 1, Thompson teaches a satellite for routing high power amplified (HPA) signals on 0 to n HPA channels to M downlink beams, said satellite comprising: n first-stage HPA switches each corresponding to one of the 0 to n HPA channels (Figure 8, switches (42) Column 7 lines 54 – 55); M multiplexing devices each to combine a respective set of n/2 HPA channels into one respective output channel (Figure 8 Section III (44), Column 7 lines 61 – 63, the HPAs are the multiplexing devices); M second-stage HPA switches each operative to receive outputs from a respective set of said M multiplexing devices (Figure 8, switches (46), Column 7 lines 64 – 67); and M downlink antenna ports coupled to said respective M second-stage HPA switches, such that the n first-stage HPA switches, M multiplexing devices, and the M second-stage HPA switches are configurable to route any combination of the 0 to n HPA channels to any of the M downlink antenna ports (Figure 8, Column 7 lines 17 – 19, Column 8 lines 1 – 7, the satellite, which comprises the HPA switches and

multiplexers, can be configured to support a variety of coverage patterns, the switch (46) allows different amplifiers to be switched to different filters depending on the desired coverage, the filters are connected to the antenna ports for transmission on the downlink, a plurality of channels will therefore be routed: from the first-stage HPA switches to the HPA, from the HPA to the second-stage HPA switches, from the second-stage HPA switches to a variety of filters and thus a variety of antenna ports thereby enabling a variety of coverage patterns).

Regarding Claim 2, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches an M/2 output switch or set of switches (Figure 8, switches (42), there are a plurality of switches).

Regarding Claim 4, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches a receive antenna or a plurality of receive antennas to receive a beam or set of beams each on a channel or set of channels (Figure 8 Section I, Column 7 lines 36 – 37, Column 7 lines 45 – 47).

Regarding Claim 5, Thompson teaches all of the claimed limitations recited in Claim 4. Thompson further teaches means for routing each of a plurality of beams from corresponding ones of said receive antenna or antennas to said n first-stage HPA switches (Figure 8, Column 7 lines 36 – 55).

Regarding Claim 6, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches wherein said signals relate to broadband communications (Column 3 lines 37 – 41).

Regarding Claim 7, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches a control unit to control operation of at least said n first-stage HPA switches and said M second-stage HPA switches such that each signal is routed to provide a desired combination of the 0 to n channels to any of the M downlink antenna ports (Figure 8, Column 7 lines 17 – 19, Column 8 lines 1 – 7, the satellite, which comprises the HPA switches and multiplexers, can be configured to support a variety of coverage patterns, the switch (46) allows different amplifiers to be switched to different filters depending on the desired coverage, the filters are connected to the antenna ports for transmission on the downlink, a plurality of channels will therefore be routed: from the first-stage HPA switches to the HPA, from the HPA to the second-stage HPA switches, from the second-stage HPA switches to a variety of filters and thus a variety of antenna ports thereby enabling a variety of coverage patterns, the switches will comprise control units to control the switching functions).

Regarding Claim 17, Thompson teaches a switching mechanism for routing signals from up to n channels to any of M downlink beams, said switching mechanism comprising: means for receiving a plurality of uplink signals each corresponding to one of n channels (Figure 8, Column 7 lines 36 – 37); means for amplifying the uplink signals to provide a plurality of high powered amplified (HPA) signals (Figure 8, the HPAs amplify the signals received on the uplink); and means for directing the HPA signals corresponding to each of said uplink signals through first-stage HPA switches each corresponding to one of 0 to n channels (Figure 8, switches (42), Column 7 lines 54 – 55), M multiplexing devices each to combine $n/2$ channels into one output channel

(Figure 8 Section III (44), Column 7 lines 61 – 63, the HPAs are the multiplexing devices), and M second-stage HPA switches to downlink antenna ports (Figure 8, switches (46), Column 7 lines 64 – 67, Column 8 lines 1 – 7), such that any combination of the 0 to n HPA signals can be directed to any of the M downlink antenna ports (Figure 8, Column 7 lines 17 – 19, Column 8 lines 1 – 7, the satellite, which comprises the HPA switches and multiplexers, can be configured to support a variety of coverage patterns, the switch (46) allows different amplifiers to be switched to different filters depending on the desired coverage, the filters are connected to the antenna ports for transmission on the downlink, a plurality of channels will therefore be routed: from the first-stage HPA switches to the HPA, from the HPA to the second-stage HPA switches, from the second-stage HPA switches to a variety of filters and thus a variety of antenna ports thereby enabling a variety of coverage patterns).

Regarding Claim 19, Thompson teaches all of the claimed limitations recited in Claim 17. Thompson further teaches wherein said n first-stage HPA switches and said M second-stage HPA switches are configured to minimize insertion losses (Column 7 lines 5 – 7, since the OMUXs maintain minimum insertion losses and the switches ultimately route the signals to and from said OMUXs said switches are inherently configured to maintain said minimum insertion losses).

Regarding Claim 20, Thompson teaches a method of routing signals on a satellite, said method comprising: receiving signals on 0 to n channels (Figure 8, Column 7 lines 36 – 37); amplifying the 0 to n channels to provide 0 to n high power amplified (HPA) signals (Figure 8, the HPAs amplify the signals received on the uplink);

and routing said HPA signals such that any combination of the 0 to n HPA signals can be directed to any of M downlink antennas (Figure 8, Column 7 lines 17 – 19, Column 8 lines 1 – 7, the satellite, which comprises the HPA switches and multiplexers, can be configured to support a variety of coverage patterns, the switch (46) allows different amplifiers to be switched to different filters depending on the desired coverage, the filters are connected to the antenna ports for transmission on the downlink, a plurality of channels will therefore be routed: from the first-stage HPA switches to the HPA, from the HPA to the second-stage HPA switches, from the second-stage HPA switches to a variety of filters and thus a variety of antenna ports thereby enabling a variety of coverage patterns).

Regarding Claim 21, Thompson teaches all of the claimed limitations recited in Claim 20. Thompson further teaches passing said signals through n first-stage HPA switches (Figure 8, switches (42), Column 7 lines 54 – 55), using M multiplexing devices each to combine n/2 channels into one output channel (Figure 8, Section III (44), Column 7 lines 61 – 63, the HPAs are the multiplexing devices), receiving outputs from said M multiplexing devices at M second-stage HPA switches, and passing said signals through said M second-stage HPA switches (Figure 8, Column 7 lines 64 – 67, Column 8 lines 1 – 7).

Regarding Claim 22, Thompson teaches a method of routing n signals to M downlink antenna ports on a satellite, said method comprising: receiving n signals each corresponding to a different channel (Figure 8, Column 7 lines 36 – 37, Column 7 lines 45 – 49); amplifying the n signals to provide n high powered amplified (HPA) signals

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(Figure 8, the HPAs amplify the signals received on the uplink); and directing the n HPA signals to any of said M downlink antenna ports in any combination using n first-stage HPA switches, M multiplexing devices and M second-stage HPA switches (Figure 8, Column 7 lines 17 – 19, Column 8 lines 1 – 7, the satellite, which comprises the HPA switches and multiplexers, can be configured to support a variety of coverage patterns, the switch (46) allows different amplifiers to be switched to different filters depending on the desired coverage, the filters are connected to the antenna ports for transmission on the downlink, a plurality of channels will therefore be routed: from the first-stage HPA switches to the HPA, from the HPA to the second-stage HPA switches, from the second-stage HPA switches to a variety of filters and thus a variety of antenna ports thereby enabling a variety of coverage patterns).

Regarding Claim 23, Thompson teaches all of the claimed limitations recited in Claim 22. Thompson further teaches passing said HPA signals through n first-stage HPA switches (Figure 8, switches (42), Column 7 lines 54 – 55), using M multiplexing devices each to combine $n/2$ channels into one output channel (Figure 8, Section III (44), Column 7 lines 61 – 63, the HPAs are the multiplexing devices), receiving outputs from said M multiplexing devices at M second-stage HPA switches, and passing said HPA signals through said M second-stage HPA switches (Figure 8, Column 7 lines 64 – 67, Column 8 lines 1 – 7).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 8 – 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 6,438,354) in view of Reinhardt et al. (US 2003/0038547).

Regarding Claim 3, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson does not teach a two-output mechanical switch.

Reinhardt teaches a two-output mechanical switch (Section 0029 lines 3 – 4, Section 0032 lines 1 – 6, Section 0035 lines 1 – 7, there can be an infinite number of different sized matrices using different combinations of inputs and outputs thus there can be a switch with two outputs).

Thompson and Reinhardt both teach satellites comprising switches for the routing of signals thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the mechanical switch matrix taught in Reinhardt in the satellites of Thompson for the purposes of reducing the size of the switching matrices thus decreasing the weight of the satellite and increasing the degree of isolation and redundancy capability between signal paths within the switch matrices.

Regarding Claim 8, Thompson teaches a satellite mechanism for routing any combination of 0 to n high power amplified (HPA) signals to any of M downlink beams,

said satellite mechanism comprising: a plurality of first HPA switching devices each operative to route a HPA signal to switch outputs (Figure 8, switches (42), Column 7 lines 54 – 55); a plurality of multiplexing devices each operative to receive inputs from the switch outputs of a respective set of said plurality of first HPA switching devices and to provide a plurality of output signals (Figure 8, Section III (44), Column 7 lines 61 – 63, the HPAs are the multiplexing devices); and a plurality of second HPA switching devices each corresponding to one of said plurality of multiplexing devices and provided to receive said plurality of output signals (Figure 8, switches (46), Column 7 lines 64 - 67), the plurality of first HPA switching devices, plurality of multiplexing devices, and the plurality of second HPA switching devices are configurable to route any combination of the 0 to n HPA signals to any of M antenna ports (Figure 8, Column 7 lines 17 – 19, Column 8 lines 1 – 7, the satellite, which comprises the HPA switches and multiplexers, can be configured to support a variety of coverage patterns, the switch (46) allows different amplifiers to be switched to different filters depending on the desired coverage, the filters are connected to the antenna ports for transmission on the downlink, a plurality of channels will therefore be routed: from the first-stage HPA switches to the HPA, from the HPA to the second-stage HPA switches, from the second-stage HPA switches to a variety of filters and thus a variety of antenna ports thereby enabling a variety of coverage patterns)

Thompson does not teach one of two switch outputs.

Reinhardt teaches one of two switch outputs (Section 0029 lines 3 – 4, Section 0032 lines 1 – 6, Section 0035 lines 1 – 7, there can be an infinite number of different

sized matrices using different combinations of inputs and outputs thus there can be a switch with two outputs thus allowing switching between one of said two outputs).

Thompson and Reinhardt both teach satellites comprising switches for the routing of signals thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use switch matrix taught in Reinhardt in the satellites of Thompson for the purposes of reducing the size of the switching matrices thus decreasing the weight of the satellite and increasing the degree of isolation and redundancy capability between signal paths within the switch matrices.

Regarding Claim 9, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Thompson further teaches n first-stage HPA switches each corresponding to one of 0 to n channels (Figure 8, switches (42), Column 7 lines 54 – 55), said plurality of multiplexing devices comprises M multiplexing devices each to combine $n/2$ channels into one output channel (Figure 8, Section III (44), Column 7 lines 61 – 63, the HPAs are the multiplexing devices), said plurality of HPA second switching devices comprises M second-stage HPA switches to receive outputs from said M multiplexing devices (Figure 8, switches (46), Column 7 lines 64 – 67).

Regarding Claim 10, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Thompson further teaches an $M/2$ output switch or set of switches (Figure 8, switches (42), there are a plurality of switches).

Regarding Claim 11, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Reinhardt further teaches a two-output mechanical switch (Section 0029 lines 3 – 4, Section 0032 lines 1 – 6, Section 0035 lines 1 – 7, there can

be an infinite number of different sized matrices using different combinations of inputs and outputs thus there can be a switch with two outputs).

Regarding Claim 12, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Thompson further teaches routing a received signal to a desired antenna port (Figure 8 Section IV (50), Column 7 lines 64 – 67, Column 8 lines 1 - 7). Reinhardt further teaches a three-output switch (Section 0029 lines 3 – 4, Section 0032 lines 1 – 6, Section 0035 lines 1 – 7, there can be an infinite number of different sized matrices using different combinations of inputs and outputs thus there can be a switch with three outputs).

Regarding Claim 13, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Thompson further teaches a receive antenna or plurality of receive antennas to receive a beam or plurality of beams each on a channel or set of channels (Figure 8 Section I, Column 7 lines 36 – 37, Column 7 lines 45 – 47).

Regarding Claim 14, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 13. Thompson further teaches means for routing each of a plurality of beams from corresponding ones of said receive antenna or antennas to said plurality of first HPA switching devices (Figure 8, Column 7 lines 36 – 55).

Regarding Claim 15, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Thompson further teaches wherein said signals relate to broadband communications (Column 3 lines 37 – 41).

Regarding Claim 16, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Thompson further teaches a control unit to control

operation of at least said plurality of first HPA switching devices, said plurality of multiplexing devices and said plurality of second HPA switching devices (Figure 8, the switches and multiplexers will comprise control units to control the switching and the multiplexing functions).

6. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 6,438,354) in view of Berger et al. (US 6,426,814).

Regarding Claim 24, Thompson teaches all of the claimed limitations recited in Claim 1. Thompson further teaches M ports, each corresponding to a respective one of the M second-stage HPA switches (Figure 8, switches (46) will route signals from the input to the output ports), wherein each of the M second-stage HPA switches is capable of switching a respective output from one of the M multiplexing devices to the corresponding port to allow access to the respective HPA signal (Figure 8, switches (46) will route signals from the input ports to the output ports).

Thompson does not teach test ports.

Berger teaches test ports (Column 5 lines 53 – 55, Column 8 lines 30 – 31, lines 50 – 56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the test ports taught in Berger in the switches of Thompson for the purpose of monitoring with external test equipment the different parameters of the switches as taught by Berger.

7. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 6,438,354) in view of Reinhardt et al. (US 2003/0038547) as applied to Claim 8 above, and further in view of Berger et al. (US 6,426,814).

Regarding Claim 25, Thompson in view of Reinhardt teaches all of the claimed limitations recited in Claim 8. Thompson further teaches a plurality of ports wherein each of the plurality of second HPA switching devices is capable of switching a respective one of the plurality of output signals to a corresponding one of the ports to allow access to the respective HPA signal (Figure 8, switches (46) will route signals from the input to the output ports).

Thompson in view of Reinhardt does not teach test ports.

Berger teaches test ports (Column 5 lines 53 – 55, Column 8 lines 30 – 31, lines 50 – 56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the test ports taught in Berger in the switches of Thompson in view of Reinhardt for the purpose of monitoring with external test equipment the different parameters of the switches as taught by Berger.

Conclusion

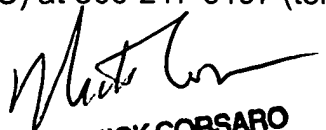
8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

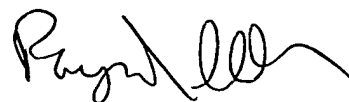
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S Dean whose telephone number is 703-305-8998. The examiner can normally be reached on 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A Maung can be reached on 703-308-7745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


NICK CORSARO
PRIMARY EXAMINER


Raymond S. Dean